REMARKS

Claims 9-17 and 19-25 are pending.

Rejection of Claims 9-11, 13-19 and 25 under 35 U.S.C. § 103

Claims 9-11, 13-17, 19 and 25 are rejected as being obvious over Akazawa (JP 2002-338911), Hammann (U.S. Pat. No. 6,811,888) and Tobita (U.S. Pub. No. 2004/0048054). The Office Action states that Akazawa teaches processing a semiconductor wafer using a polyimide sheet on top of the wafer, Hammann teaches use of a polyimide sheet with a UV laser, and Tobita teaches a circuit board containing filler and having a density from 1.1 to 1.5 g/cm^3.

Claims 9, 14 and 19, and claims dependent therefrom are non-obvious over the cited references because there would have been no expectation of success in combining the teachings of Akazawa and Hammann, and because Hammann and Tobita teach away from their combination.

Akazawa is directed to an adhesive sheet that can be used in processing a semiconductor wafer. Akazawa's sheet is not in any way related to laser processing, and Akazawa teaches no particular properties that would make an adhesive sheet useful in laser processing.

Hammann is directed to an anti-spatter coating for laser machining, where the coating is a carbonizable polymer. *Hammann* at column 1, lines 47-52. Hammann's polyamide coating is not a sheet or film, but is a layer formed by coating a substantially liquid pre-polymer precursor directly onto the workpiece. *Hammann* at column 2, lines 44-47. Hammann teaches that the resultant polymer coating is rigid, carbonizable, and preferably carbonized. *Hammann* at column 3, lines 20-23 and 42-57. Hammann teaches a variety of harsh methods for removing the coating, but Hammann does not teach peeling off the coating. *Hammann* at column 4, lines 7-20. Hammann is completely silent regarding adhesive sheets, and nothing in Hammann would lead one of ordinary skill to believe that an adhesive sheet would be a suitable substitute for Hammann's rigid carbonizable polymer coating.

No combination of Akazawa and Hammann would lead one of ordinary skill to expect success in using an adhesive sheet used in laser processing. Akazawa teaches an adhesive sheet, but is silent regarding laser processing. Hammann teaches nothing of using an adhesive sheet. Hammann teaches using a substantially liquid pre-polymer precursor to form a rigid carbonizable

polymer coating, which is used in laser machining methods. Neither a substantially liquid pre-polymer precursor nor a rigid carbonizable polymer coating would be a readily adaptable modification to an adhesive sheet such as that of Akazawa. In obviousness rejections, there must be some reasoning with some rational underpinning to support the legal conclusion of obviousness. *M.P.E.P. §2143.01.IV; see also KSR v. Teleflex, 550 U.S. 398 (2007).* In the present case, there is no basis to consider that one of ordinary skill would have expected to successfully incorporate Hammann's liquid pre-polymer precursor into Akazawa's adhesive sheet. There also is no basis to consider that one of ordinary skill would have expected to successfully incorporate Hammann's rigid carbonizable polymer coating into Akazawa's adhesive sheet. As such, there is insufficient rational underpinning to support the legal conclusion of obviousness resultant from a combination of the teachings of Akazawa and Hammann.

Tobita does not provide basis for expecting success in combining Hammann and Akazawa. Tobita teaches a thermal conductive polymer that is used for cooling printed circuits. *Tobita* at Abstract and paragraphs [0007] and [0040]. Tobita's polymer is not in any way related to laser processing or any type of semiconductor wafer processing. Thus, Tobita does not teach anything related to either Hammann or Akazawa. As such, Tobita provides no further teaching that would guide one of ordinary skill to combine the teachings of Akazawa and Hammann.

Further, Tobita teaches away from the claims and teaches away from combination with Hammann. Tobita's invention is directed to liquid crystalline polymers which have particular thermal conductive properties. *Tobita* at Abstract and paragraph [0007]. Tobita teaches that using filler creates problems, and it is most preferable to have substantially no filler. *Tobita* at paragraph [0006]. Tobita emphasizes the importance of minimizing the amount of filler, and points out that the liquid crystalline polymer of Tobita's invention is key in enabling this goal of minimizing filler:

> When the thermal conductive filler is incorporated into the thermotropic liquid crystalline polymer, the resultant thermal conductive polymer molded article can be improved in the thermal conductivity (λ_1). However, the density of the thermal conductive polymer molded article is increased, whereas the electrical insulation properties may deteriorate. Therefore, ***for preventing such a problem, it is preferred that the thermotropic liquid crystalline composition contains substantially no thermal conductive filler. Further, it is most preferred that the***

> ***thermal conductive polymer molded article is obtained from solely the thermotropic liquid crystalline polymer***. *Tobita* at paragraph [0036].

Thus, Tobita's invention is directed toward the use of an improved thermotropic liquid crystalline polymer, whereby incorporation of filler can be minimized. Thus, Tobita would lead one of skill in the art to always to use Tobita's thermotropic liquid crystalline polymer, and to avoid using filler. Accordingly, modification of Akazawa and/or Hammann according to Tobita's teachings would require use of Tobita's thermotropic liquid crystalline polymer, and minimal or no use of filler. The Office Action indicates that it would have been obvious to incorporate the filler materials of Tobita into the teachings of Akazawa and Hammann. However, it would be contrary to Tobita's teachings to incorporate only filler and not thermotropic liquid crystalline polymer into the teachings of Akazawa and Hammann. *See Tobita* at paragraph [0006] and [0007]. As such, Tobita teaches away from a polymer layer that contains filler but no thermotropic liquid crystalline polymer.

In addition, attaining a density of at least 1.1 g/mL results according to Tobita's teachings would also require use of a thermotropic liquid crystalline polymer. Tobita's teachings regarding density are premised on the formation of Tobita's liquid crystalline polymer. That is, Tobita merely teaches that a density of at least 1.1 g/mL is an inevitable result of forming the thermotropic liquid crystalline polymer of Tobita's invention:

> On the other hand, it is difficult to obtain a thermal conductive polymer molded article having a density of less than 1.10, taking into consideration the physical properties of the thermotropic liquid crystalline polymer. *Tobita* at paragraph [0043].

Tobita does not teach that the density of at least 1.1 g/mL is itself a desired goal, only that in order to obtain the desired thermotropic liquid crystalline polymer, a density of 1.1 g/mL or more will result. Thus, this teaching of Tobita further emphasizes that one of ordinary skill would be directed by Tobita to use the thermotropic liquid crystalline polymer, and, when Tobita's thermotropic liquid crystalline polymer is used, a density of at least 1.1 g/mL would result. As such, Tobita further teaches away from a polymer layer that contains filler but no thermotropic liquid crystalline polymer.

However, any combination in which a laser processing layer is formed of Tobita's thermotropic liquid crystalline polymer would be contrary to the teachings of Hammann.

Hammann teaches laser machining using a rigid carbonizable polyimide polymer coating. *Hammann* at column 1, lines 47-52. To use Tobita's thermotropic liquid crystalline polymer instead of Hammann's rigid carbonizable polyimide polymer coating would remove the carbonizable advantages provided by Hammann's rigid carbonizable polyimide polymer coating. Thus, to proceed in accordance with Tobita's teachings would be contrary to the teachings of Hammann. Accordingly, Tobita's and Hammann's teachings are incompatible with each other. It is well established that references cannot be combined where the references teach away from their combination. *M.P.E.P. §2145.X.D.2; see also In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983). The teachings of Tobita and Hammann are incompatible. Therefore, Tobita and Hammann cannot be combined to render the claims obvious. Further, even if the references could be combined, one of ordinary skill would have no reasonable expectation of success in laser machining using Tobita's thermotropic liquid crystalline polymer instead of Hammann's polyimide polymer coating.

Moreover, Tobita teaches that the thermotropic liquid crystalline polymer is applied to printed circuits, not to protective sheets. And Tobita teaches no benefit in any workpiece processing method that would result from using Tobita's thermotropic liquid crystalline polymer. Accordingly, there is no teaching in Tobita that would lead one of ordinary skill to apply the filler and/or the density teachings of Tobita to a base material of Akazawa's adhesive sheet. Accordingly, Tobita and Akazawa further are not properly combinable.

In addition to the above, the combination of the references does not teach various elements of the rejected dependent claims. For example, no combination of the references teaches the ratio of extinction coefficient at ultraviolet wavelength region as recited in Claim 10, much less the specific extinction coefficient of the base material as recited in Claim 11. Further, no combination of the references teaches the ratio of tensile strength as recited in Claim 15, much less the specific tensile strength of the protective sheet as recited in Claim 16. Also, the use of Hammann's rigid carbonizable polymer coating as the base material in Akazawa's protective sheet would result in a base material not containing an aromatic polymer or silicone rubber, in contrast to the invention claimed in Claim 25. Accordingly, for the above reasons, at least the aforementioned dependent claims are further non-obvious over the cited references.

Rejection of Claim 12 under 35 U.S.C. § 103

Claim 12 is rejected as being obvious over Akazawa, Hammann and Tobita in view of Chang (U.S. Pat. No. 6,864,459) and De Steur (U.S. Pat. No. 6,610,960). The Office Action states that Chang and De Steur teach using a 355 nm laser to drill a hole.

Claim 12 depends ultimately from Claim 14. As discussed above, Claim 14 is non-obvious over Akazawa, Hammann and Tobita. Neither Chang nor De Steur add to that which is lacking in Akazawa, Hammann and Tobita. As such, Claim 14 is further non-obvious over Akazawa, Hammann, Tobita, Chang and De Steur, alone or combined. Accordingly, Claim 12, which depends from Claim 14, also is non-obvious over the cited references.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

CONCLUSION

In view of the above, Applicants respectfully submit that claims are patentable and request that they be passed to issue. Applicants invite the Examiner to call the undersigned if any remaining issues might be resolved by telephone.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: April 7, 2009

By: /Kerry Taylor/
Kerry Taylor
Registration No. 43,947
Attorney of Record
Customer No. 20995
(619) 235-8550

6937462
040609